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ABSTRACT

Math Sense consists of five books that develop from basic to more advanced math skills. This document contains a placement test used with Math Sense to help students and their teachers decide into which Math Sense book to begin working. The placement test is divided into six parts, each consisting of 10 to 22 problems, and is based on exit skill questions that students need to master in order to move on the next level of work and problem-solving questions. (KHR)

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# Math Sense

## Placement Test

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New Readers Press

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Math Sense Placement Test
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# To the Student

*Math Sense* consists of five books that develop from basic to more advanced math skills. This placement test will help you and your teacher decide in which *Math Sense* book to begin working.

The test is divided into six parts, each consisting of 10 to 22 problems. Each part consists of both math skill questions and problem-solving questions.

**Since there are 90 problems on the entire test, you may want take it in more than one sitting.**

## Directions

- Work all of the problems that you can. This is an opportunity to show what you know and what you need to work on.
- If all of the problems in a part are too difficult for you, tell your teacher, who may have you skip that part or end the test entirely. Make your best effort, but do not get frustrated or discouraged. This is just the beginning.
- This is not a timed test. Work each problem carefully, and check your work.
- You should do your work on scrap paper, but you should write your answers in this booklet.

  – Write answers to computation problems, as shown below.

$3 + 5 = 8$ $\quad 25\overline{)750} = 30$

  – Write answers to word problems on the lines provided, as shown below.

  Last week, Maria worked 8 hours a day for 5 days. How many hours did Maria work that week?

  40

When you have completed your work on the test, turn it in to your teacher.

- You or your teacher will check your answers.
- At the end of each part, fill in the chart to track correct answers.
- Together with your teacher, fill in the study planner on the back cover.

Good luck!

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Part 1

# Whole Numbers and Money

**Solve the following problems.**

1. $\begin{array}{r} 4{,}136 \\ -\,3{,}455 \\ \hline \end{array}$

2. $\$17.85 + \$39.95 + \$9.64 =$

3. $\begin{array}{r} \$16.48 \\ \times \quad 9 \\ \hline \end{array}$

4. $372 \times 26 =$

5. $6\overline{)\$2{,}838}$

6. $5{,}369 \div 35 =$

**Solve the following problems. Write your answers in the spaces provided.**

7. Sheila buys a box of pens for $3.79, a date stamp for $10.58, and a box of file folders for $7.28. Estimate the total cost of her purchase by rounding each price to the nearest dollar.

_____

8. Tony, a warehouse manager, needs to ship the entire stock of rugs in storage at the warehouse. His instructions are to ship an equal number of rugs to each of 3 stores. Tony has 127 rugs already loaded onto a delivery truck. He has 146 rugs left to be loaded. How many rugs will Tony ship to each store?

_____

9. Dominica finds the following ad in the newspaper.

If Dominica buys the television set on sale, how much money will she save?

_____

10. After filling his car's gas tank, John drove 160 miles and stopped for lunch. He then drove another 64 miles and stopped for gas. It took 14 gallons of gas to fill the tank again. Which of the following expressions can be used to find how many miles per gallon John's car gets?

**(1)** 160 ÷ 14

**(2)** (160 + 64) × 14

**(3)** (160 − 64) × 14

**(4)** (160 + 64) ÷ 14

**(5)** (160 − 64) ÷ 14

_____

11. Alicia has $3,562 in a savings account. She plans to buy a used car at a cost of $6,500. If she withdraws $1,575 from her savings account to use as a down payment, how much money will she have left in her savings account?

_____

12. Matt is cutting 13-inch lengths from a board to use as bases for a craft project. How many bases can he cut from a board that measures 168 inches in length?

_____

**Problem 13 refers to the following table.**

**Montfair Hotel Statistics for July 7–9**

| Date | Vacant Rooms | Occupied Rooms |
|---|---|---|
| July 7 | 46 | 154 |
| July 8 | 69 | 131 |
| July 9 | 113 | 87 |

13. What was the average number of occupied rooms per day during the period of July 7–9?

_____

14. A company is sending 42 employees to a safety seminar. The registration fee is $38 per person. The company also plans to pay for its workers to attend a luncheon at the cost of $7.50 per person. How much will the company pay in all for the seminar?

_____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 1: Whole Numbers and Money**

**____ correct out of 6 skill questions (1–6)**

**____ correct out of 8 problem-solving questions (7–14)**

**Total correct: _____ out of 14 problems**

Part 2

# Decimals, Fractions, Ratios, and Percents

**Solve the following problems. Express answers in lowest terms.**

1. $1.485 + 3.7 + 12.08 =$

2. $13.6 - 9.75 =$

3. $50 \times 1.25 =$

4. $8.4 \div 0.2 =$

5. Solve for $x$. $\frac{22}{8} = \frac{x}{12}$

6. $\frac{2}{3} + \frac{4}{5} =$

7. $7\frac{3}{8} - 2\frac{3}{4} =$

8. $\frac{9}{10} \times \frac{2}{3} =$

9. $2\frac{1}{4} \div \frac{1}{8} =$

10. Find 60% of 340.

**Solve the following problems. Write your answers in the spaces provided.**

11. Elizabeth cuts two pieces of fabric, each $2\frac{5}{8}$ yards long, from a bolt of fabric containing 30 yards. How many yards of fabric are left on the bolt?

_____

12. Steve bought four used CDs for $23.50. To the nearest cent, what was the average cost of each CD?

_____

13. The table below shows the hours of overtime that Maria worked for four months.

| Month | Overtime Hours |
|---|---|
| September | 21.8 |
| October | 18.7 |
| November | 10.5 |
| December | 36.5 |

How many more hours of overtime did Maria work in December than in September?

_____

14. A city recreation program has 25 boys and 45 girls in its volleyball program. Which of the following choices shows the ratio of girl players to the total number of volleyball players?

    **(1)** 5:9

    **(2)** 5:14

    **(3)** 9:5

    **(4)** 9:14

    **(5)** 14:9

    _____

15. A department store ran the following ad in the newspaper.

    Kyle and Susan plan to purchase a rug originally priced at $112. How much will they pay for the rug?

    _____

16. At Wagner Industries, there are 5 full-time employees for every 2 part-time employees. If the company has 90 full-time employees, how many part-time employees are there?

    _____

17. Brian estimates that he spends 25% of his take-home pay on housing and $\frac{1}{5}$ of his pay on food. If Brian brings home $2,500 per month, how much more does he spend on housing than on food?

    _____

18. Julissa is using a map to find the distance between two cities. Using a ruler, she finds that the distance on the map is $2\frac{3}{4}$ inches. The map scale reads: $\frac{1}{2}$ inch = 80 miles. How many miles apart are the two cities?

    _____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 2: Decimals, Fractions, Ratios, and Percents**

**____ correct out of 10 skill questions (1–10)**

**____ correct out of 8 problem-solving questions (11–18)**

**Total correct: ____ out of 18 problems**

Part 3

# Measurement

**Solve the following problems.**

1. 20 cups = ____ quarts

2. $2\frac{1}{2}$ feet = ____ inches

3. 320 centimeters = ____ meters

4. 1 pound 12 ounces + 4 pounds 5 ounces = ____ pounds ____ ounces

5. 350 grams × 12 = ____ kilograms

6. 3 cups − 1 cup 3 fluid ounces = ____ cup ____ fluid ounces

**Solve the following problems. Write your answers in the spaces provided.**

7. At what average speed (in miles per hour) must Lynn drive to travel 248 miles in 4 hours?

_____

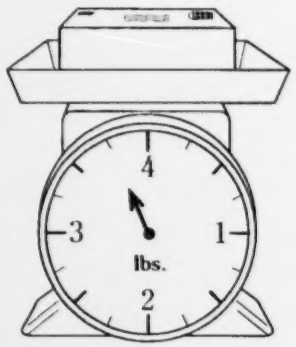
8. Barbara has a meeting at 1:30 P.M. The list below shows a few things she needs to get done before the meeting and the amount of time she estimates each task will take.

| Things To Do |
| --- |
| Pick up copies — 30 minutes |
| Print agendas — 15 minutes |
| Set up conference room — 20 minutes |

What is the latest time that Barbara can begin to do the things on her list and still finish in time for the meeting?

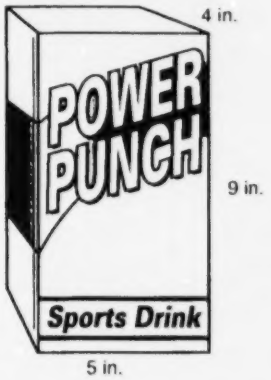
_____

9. How much more than $1\frac{1}{2}$ pounds does the package on the scale weigh?




_____

**Problems 10–11 refer to the following drawing.**




**10.** A new protein drink will be sold in the container shown above. What is the volume of the container in cubic inches?

_____

**11.** The manufacturer has placed a label on the front face of the container. Which of the following expressions could be used to find the area in square inches of the label for the container?

**(1)** $9 \times 5 \times 4$

**(2)** $2(9) + 2(5)$

**(3)** $9 \times 5$

**(4)** $2(9) + 2(4)$

**(5)** $4 \times 5$

_____

**12.** At noon, a hospital patient's temperature was 102.6°F. An hour later, the patient's temperature dropped 1.8°. What was the patient's temperature at 1 P.M.?

_____

**13.** Chris is making soup. He is using a pan with a capacity of 70 fluid ounces. Chris pours in 1 quart 1 cup of vegetable stock. How many more fluid ounces can he add before the pan is full?

_____

**14.** The shipping weight for one set of 75-centimeter window blinds is 3,600 grams. If you ship six sets of the blinds, what is the weight in kilograms?

_____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 3: Measurement**

**____ correct out of 6 skill questions (1–6)**

**____ correct out of 8 problem-solving questions (7–14)**

**Total correct: _____ out of 14 problems**

# Data Analysis

**Solve the following problems. Write your answers in the spaces provided.**

**Problems 1–2 are based on the table below.**

| Ruth's Long-Distance Phone Charges (monthly bill rounded to nearest dollar) | |
|---|---|
| August | $24 |
| September | $31 |
| October | $28 |
| November | $42 |
| December | $21 |

1. In which month did Ruth pay the greatest amount for long-distance calls?

_____

2. What is Ruth's mean (average) long-distance charge for the 5-month period?

_____

**Problems 3–4 refer to the following graph.**

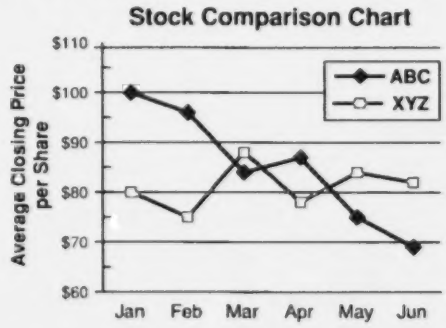
3. How many catalog sales did New Trendz Clothing have in July?

_____

4. What is the ratio of online sales to in-store sales for the month of July? (Write the ratio in simplest terms.)

_____

**Problems 5–6 refer to the following graph.**




5. Between which two months did stock XYZ have the greatest increase in price?

_____

6. Based on the data, which of the following is a logical conclusion about the closing price of stock ABC in July?

   (1) One share of ABC will be worth more than one share of XYZ.

   (2) The price per share of ABC will increase to $80 per share.

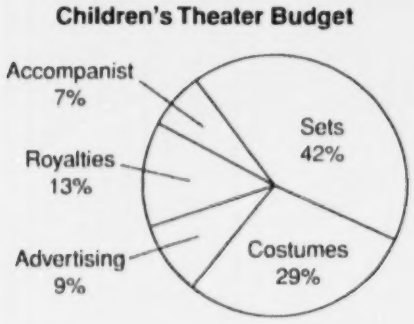
   (3) The closing price per share will increase by $10.

   (4) The closing price per share of stock ABC will be $30.

   (5) The closing price per share of stock ABC will be less than $70.

_____

**Problems 7–8 refer to the following graph.**



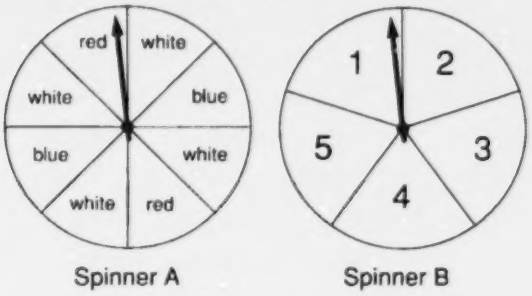

7. What percent of the budget was not spent on sets?

_____

8. If the total budget for the children's theater is $2,400, how much money will be spent on advertising and royalties?

_____

**Problems 9–10 refer to the following spinners.**




9. What is the probability of spinning red on spinner A? (Write the probability as a percent.)

_____

10. In a game, a player spins spinner A and then B. What is the probability of spinning white and then the number 4? (Write the probability as a fraction.)

_____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 4: Data Analysis**

**____ correct out of 5 skill questions (1, 3, 5, 7, and 9)**

**____ correct out of 5 problem-solving questions (2, 4, 6, 8, and 10)**

**Total correct: _____ out of 10 problems**

# Algebra

**Evaluate the following expressions.**

1. $4^3 =$
2. $\sqrt{81} =$
3. $-5 + 3 =$
4. $7 - (-2) =$
5. $-4(-9) =$
6. $\frac{-15}{3} =$
7. $5 - 2(-5)$
8. $\frac{8}{-2} + 6(1 - 2)$
9. $-\sqrt{25} + 4(2^3 + 2)$

**Solve for $x$.**

10. $15 + x = 56$
11. $-6x = -72$
12. $4x + 7 = -5$
13. $3 - x = 2x - 24$
14. $4(5 - 2x) = -20$
15. $\frac{x}{4} = \frac{21}{14}$

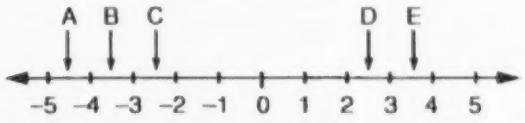
**Solve the following problems. Write your answers in the spaces provided.**

**16.** Find the value of the following expression when $x = -2$, $y = 3$, and $z = -1$.

$x^2 + 4y + 7z$

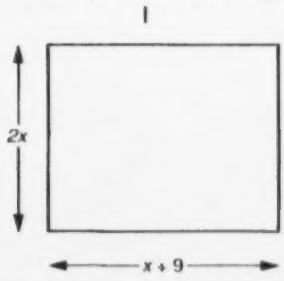
_____

**17.** Which of the points on the number line below represents the value –3.5?




_____

**Problem 18 refers to the following figure.**




**18.** The perimeter of the rectangle is 54 inches. What are the length and width of the rectangle in inches?

_____

**19.** Seven more than twice a number is less than or equal to –1. Let $n$ equal the unknown number. Which of the following inequalities represents the situation?

**(1)** $2n + 7 = -1$

**(2)** $2(n + 7) \geq -1$

**(3)** $2(n + 7) \leq -1$

**(4)** $7 + 2n \leq -1$

**(5)** $7 + 2n < -1$

_____

**20.** The sum of two numbers is 46. The second number is 10 less than three times the first number. What are the two numbers?

_____

**21.** At 8 A.M., Ally starts driving at an average rate of 56 miles per hour. Claude leaves from the same place at 8:30 A.M. How fast will he need to drive to catch up to her at 10:30 A.M.?

_____

**22.** The sum of the ages of Paul and his brother Stuart is 37. Five years ago, Paul was twice as old as Stuart. How old is Paul now?

_____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 5: Algebra**

**____ correct out of 15 skill questions (1–15)**

**____ correct out of 7 problem-solving questions (16–22)**

**Total correct: _____ out of 22 problems**

# Part 6 Geometry

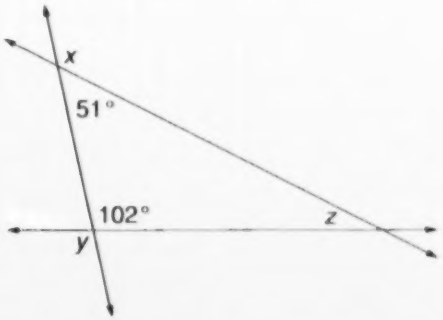
**Solve the following problems. Write your answers in the spaces provided.**

1. Angles A and B are complementary. If $\angle A$ measures 72°, what is the measure of $\angle B$?

_____

**Problems 2–4 refer to the following figure.**

Three lines form a triangle. The measures of two interior angles of the triangle are given in the figure below.




2. What is the measure of angle x?

_____

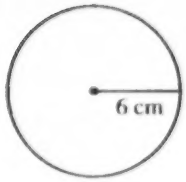
3. What is the measure of angle y?

_____

4. What is the measure of angle z?

_____

5. Using 3.14 for pi ($\pi$), find the circumference of the circle shown to the right.

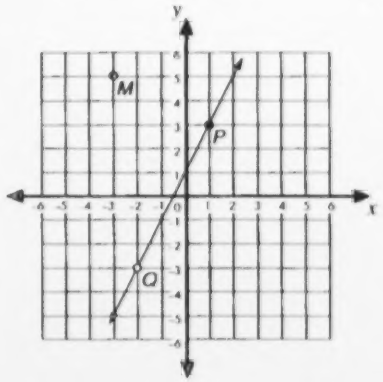



_____

6. Tom is buying a new storage shed for his yard. The sides, top, and bottom of the shed are all rectangular in shape. If the base of the shed is 6 feet long and 4 feet wide and the height of the shed is 5 feet, what is its volume in cubic feet?

_____

**Problems 7–8 refer to the following grid.**




7. What are the coordinates of point M?

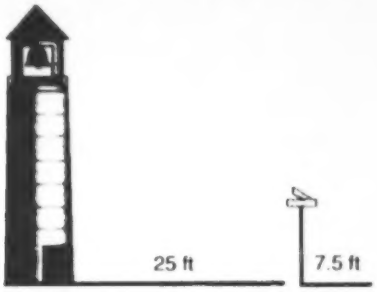
_____

8. What is the slope of the line that passes through points P and Q?

_____

**Solve the following problems. Write answers in the spaces provided.**

**Problem 9 refers to the following drawing.**



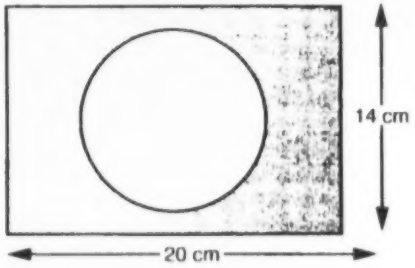

9. The shadow of a bell tower is 25 feet long at the same time that a nearby street sign, 12 feet in height, casts a 7.5-foot shadow. What is the height of the bell tower?

_____

10. Bryan needs to find the cost of carpeting two square rooms in his house. One room measures 15 feet on each side and the other is 12 feet on each side. If the carpeting costs $13 per square yard, how much will Bryan pay for the carpeting? (*Hint:* 1 square yard = 9 square feet.)

_____

11. The flag below has a white circle on a blue background. The radius of the circle is 5 centimeters. What is the area in square centimeters of the blue background? Use 3.14 for pi ($\pi$).




_____

12. A camper hikes 6 miles due north of his campground and then 8 miles due east. If the camper hikes southwest in a straight line toward his campground, how many miles would he need to hike to be back at his starting position?

_____

**FILL IN THIS CHART AFTER CHECKING ANSWERS.**

**Part 6: Geometry**

**____ correct out of 8 skill questions (1–8)**

**____ correct out of 4 problem-solving questions (9–12)**

**Total correct: _____ out of 12 problems**

# *Math Sense*
# Study Planner

After your answers are checked, you and your instructor will use the information from the chart at the end of each part of the test to fill out this Study Planner. Your instructor will determine whether your level on each part of the test is *Mastery* or *Study Needed* and then assign your book from the list below.

| Part | Skills Correct/Total | Problem Solving Correct/Total | Total Correct/Total | Level |
|---|---|---|---|---|
| 1 | _____/6 | _____/8 | _____/14 | ☐ Mastery<br>☐ Study Needed |
| 2 | _____/10 | _____/8 | _____/18 | ☐ Mastery<br>☐ Study Needed |
| 3 | _____/6 | _____/8 | _____/14 | ☐ Mastery<br>☐ Study Needed |
| 4 | _____/5 | _____/5 | _____/10 | ☐ Mastery<br>☐ Study Needed |
| 5 | _____/15 | _____/7 | _____/22 | ☐ Mastery<br>☐ Study Needed |
| 6 | _____/8 | _____/4 | _____/12 | ☐ Mastery<br>☐ Study Needed |
| **TOTAL** | _____/50 | _____/40 | _____/90 | |

Based on the results of the *Math Sense Placement Test*, begin working in the following book:

☐ *Whole Numbers and Money*
☐ *Decimals, Fractions, Ratios, and Percents*
☐ *Measurement and Data Analysis*
☐ *Algebra and Geometry*
☐ *Comprehensive Review*

**Student Name** _____ **Teacher Name** _____ **Date** _____

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